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ABSTRACT

The purpose of this paper is to provide a systematic procedure that uses evaluation data to improve an ongoing program during its in-progress stage. (Author)

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USING EVALUATION DATA TO IMPROVE AN ONGOING PROGRAM: A METHODOLOGY

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The purpose of this paper is to provide a systematic procedure that uses evaluation data to improve an ongoing program during its in-progress stage.

RATIONALE

The notion of educational evaluation evolved out of the context of the measurement discipline, and it was intimately related to the objectives of instruction and the improvement of instruction.

Evaluation as a term came into being to express a broader concept than measurement. According to Pace (1968), evaluation puts measurement on the spot as being inadequate. He asserts that "evaluation accepted and welcomed the use of observations, interviews, check lists, questionnaires, testimony, the minutes of meetings, time logs, and many other means of assembling information." Evaluation includes measurement and seeks to extend the range of measurement, but it is more than measurement. It includes psychometrics but holds that psychometric theory is irrelevant in many evaluation activities.

The use of educational evaluation is widespread. Current evaluation interest appears to be cutting across new "fronts". New technologies and new problems give rise to corresponding evaluation. Now that education and educational involvements have expanded there is an accompanying need for the

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application of the new evaluation concepts. According to Bloom (1968): "Evaluation is a two-edged sword which can enhance student learning and personality development." His position is that evaluation can have positive or negative effects on teachers, programs, school systems, administrators, and decision-makers in general.

For the purpose of developing this methodology the following definitions of evaluation will be used:

> A procedure for collecting and analyzing data to produce pertinent information which can be used to facilitiate decision-making by decision-makers.

Ultimately, the analysis of data aspect of the preceding definition offers information that influences the decision to maintain, or improve a program. It is the improvement aspects of the outcome of an evaluation that is the concern of this paper.

PROCEDURE

Use the "Operationalization of Fuzzy Concepts"*, a methodology, to generate the working set of variables. Consider a set of components or dimensions that represent the decision-maker's goal intent. By using the suggested methodology, the assumption that the decision-maker's real goal intent will be preserved throughout the process of generating the set components under consideration can be made. The words component, dimension, and variable can be used interchangeably throughout the evaluation.

The application of the operationalization of fuzzy concepts, a methodology, to a goal or a generalization yields a list of behaviorally stated components that represent the decision-maker's real intent of the

*A systematic way to break down a generalization into its component parts and provide a procedure for quantifying those components.

goal or generalization under consideration. The list of behaviorally stated components makes up the set of variables that dictate the evaluation activity.

It should by stated, perhaps, that the operationalization of a fuzzy concept should not imply a point on a scale, rather, it should imply a variable (a component having numerical value assigned to it that is not fixed with respect to time). Moreover, it is the variable that represents the source from which the evaluation activity comes. The concept of operationalization should be differentiated from things it purports to do.

The evaluation activity includes collecting, processing, and analyzing data. In particular, the evaluation activity includes either a qualitative analysis of variables or a quantitative analysis of variables. The fact that the variables have been delineated to the extent that they can be stated in the form of a behavioral component implies the following:

1. The desired behavior can be observed directly from a qualitative perspective or;
2. The desired behavior is measurable from a quantitative perspective.

Thus giving rise to the development of either measurable techniques or observable techniques or both.

INSTRUMENTATION

In order to collect, process, or analyze data various tools and instruments should be used. Often times, tools such as statistics, data processing equipment, and computers are used. Such instruments as standardized tests, teacher-made tests, questionnaires, and "off-the-shelf" tests are often used also.

A variety of tools and instruments should not be used indiscriminantly. In fact, careful thought should be the underlying principle that leads to the decision of using a particular instrument. The nature of the variables and the corresponding behaviors to be considered must influence the evaluative instrument to be used.

The decision as to whether to use a ready-made instrument should follow answers to a set of questions or concerns. They include the following:

1. Whether there is a ready-made instrument that provides answers to decision-makers concerns.
   a. If so, does it fit the desired use in its present form?
   b. If the acquisition of the instrument is economically practical.
2. What sacrifice does the use of a ready-made instrument engender?
3. What ill-effect will the potential environment have on the validity and reliability of a ready-made instrument?
   a. What aspects of the enterprise differ from those of the test criterion?
   b. What modification of the instrument will be required by local policy?

DATA

Evaluation data should influence systematic change during the in-progress stage of a program. Evaluation data must provide a rational basis for modification should program operations warrant such change. That is, if (a) a deviation from the real goal intent of the decison-maker occurs and (b) a discrepancy with respect to the implementation of the decision-maker's real goal intent occurs, then, the evaluation data should provide implication for a systematic change that would lead to the attainment of the decision-maker's desired outcomes. The

principal factor that (a) indicates the existence of a deviation or discrepancy from the decision-makers real goal intent and (b) governs the implications for systematic change is the variable.

A variable represents the smallest element of a goal intent. It is the variable, however, that serves a vital role in shaping the evaluation activity. Variables that have been operationalized--transformed into a non-fuzzy concept* or state -- are the key factors that dictate the nature and form of the analytical aspect of the evaluation.

The analysis of evaluation data may vary considerably with regards to instrumentation as mentioned in the preceding section. The instrumentation is governed by the set of variables that characterize the decision-maker's real goal intent. Thus, the analysis of data may include such devices as anecdotal observations of specific states. For the most part, the evaluator has the responsibility of developing and applying procedures for describing and measuring the goal intents truly and accurately.

Essentially there are two kinds of variables that the evaluator must accommodate. They are explicit and implicit. An explicit variable is an unambiguous characteristic of a goal intent that can be observed directly. The following are examples of explicit variables:

1. Pick up trash
2. Be present in class
3. Come to class on time
4. Have a perfect attendance

An implicit variable is an unambiguously paired characteristic of a goal intent, usually combined with the conjunction 'and' that can be

*By definition a concept that cannot be observed directly is a "fuzzy" concept.

observed directly. Some examples of implicit variables are the following:

1. Run, skip, and jump
2. Swing to and fro
3. Implement or execute
4. Plain and simple

This differentiation between variables is patently artificial. It is merely a convenient way of variable clarification, for no verb, or related set of verbs, for that matter, is in itself either explicit or implicit. In neither case is the distinction a hard and fast one. The explicit variable purports to represent a single behavior such as the examples cited. The implicit variable is a bit more complex as several related verbs represent a single behavior. Both explicit and implicit variables share a common feature, however. The specified behavior is a single activity which is common to the variables as indicated in the set of examples above.

It is noteworthy to mention that, in general, this distinction between variables is a reflection of the inadequacy of this methodolgy to date. The limited range of evaluation methodology reinforces this distinction while highlighting its artificiality*.

APPLICATION

In order to apply evaluation data such that it can be used to improve an ongoing program systematically, the evaluator and the decision-maker must work together closely. Moreover, their roles must be clearly distinctive. The role of the evaluator is to provide useful data for decision-making and, at the same time, preserve the real intent of the decision-maker throughout the evaluation

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*The spirit of this paragraph and the preceding one was influenced from "Logic and Scientific Method in Research on Teaching" By M. Bradbeck.

of the program. The role of the decision-maker is, among other things, the management of the program throughout its developmental and operational stages.

The operationalization of fuzzy concepts is a useful methodology for the evaluator to employ to generate a set of pertinent variables. Once a set of variables that represent the decision-maker's goal intent have been produced, the evaluator can begin to influence programmatic changes for the sake of improvement. In particular, he can do the following:

1. Secure the decision-maker's list of prioritized goal intentions.
   a. Have the decision-maker rank order the variables with respect to goals in terms of their importance to him.
   b. Consider the rank ordered set of variables for the purpose of developing observational techniques with regards to available resources.
2. The decision-maker specifies the ordering of the variables to be evaluated.
3. The evaluator evaluates each variable which manifest itself in the form of a sentence on its own merit.
   a. The predicate of the derived sentences dictates the evaluation activity.
   b. The required evaluation activity dictates the observation to be made or instrumentation to be used.
4. The evaluator collaborates with the decision-maker about the implications and inferences as to the meaning of the variables under consideration.
5. The decision-maker considers the evaluators position with respect to the variables in question. In the case of deviations or discrepancies, the decision-maker should either:
   a. Modify the program, or
   b. Modify the goals and, hence, the variables.
6. The evaluator develops appropriate observational techniques.
   a. In the case of direct and indirect obtrusive or unobtrusive measures, the evaluator develops the technique.

b. In the case of instrumentation the evaluator prescribes, describes, or secures, and/or develops the appropriate instrument.

c. In the case of appropriate ready-made instruments, the evaluator endorses them.

7. The evaluator has the responsibility of carrying out the observational techniques and/or executing the instrumentation.

a. In the case of observational techniques, verbs such as pick, come, skip, and jump dictate the evaluation activity.

b. In the case of developing instruments, a clear statement that the instrument is intended for the evaluation of a particular program only should be prominently stated in the accompanying instruments. The degree to which such a statement can be expected to restrict the use of such instruments will vary.

8. The evaluator reports his findings to the decision-maker -- he states his conclusions in writing.

The preceding steps characterize much of the way in which an evaluator evaluates an ongoing program. It is interesting to observe, however, that only one of the above steps is crucial to improving a program during its in-progress stage so that desired results will be a natural outcome. In particular, step 5 is critical if evaluation data is to be used methodically to improve an ongoing program.

The implications of step 5 provide the decision-maker with the choice of either modifying the program or modifying the goals. If the decision-maker decides to modify the program, the evaluator can be a useful resource to aid in improving the ultimate outcome of the program's operations. If the decision-maker decides to change the goals so that the variables are consistent with the program's operations then the job of the evaluator changes. That is, he no longer has the responsibility of evaluating the program that was under consideration originally. A change of goals implies a change of intended outcomes.

SUMMARY

The re-emergence of evaluation of the 1960's continues its upward trend across many educational programs and social programs. Thus, the way in which evaluation data can and must be used to effect programmatic change needs to be made available to perspective users. This writer has offered a rationale and a procedure for using evaluation to improve an ongoing program.

In order to use evaluation data to improve an ongoing program, the evaluator must secure a commitment from the decision-maker to work with him throughout much of the evaluative process. That is, the evaluator must secure and maintain the decision-maker's cooperation, support, and participation throughout the development of observational techniques and/or instruments. The evaluation of an enterprise cannot be conducted adequately in the absence of the decision-maker. In fact, good evaluations are not merely carried out for decision-maker's. They are in part carried out by decision-makers.

The matter of having decision-makers play a vital role in the evaluation of an enterprise such as an ongoing program should be, in part, by design. It is the belief of this writer that the decision-maker's involvement will accomplish the following:

1. Increase the decision-maker's awareness of the evaluation endeavor.
2. Develop within the decision-maker respect and appreciation for the evaluative results.
3. Provide the decision-maker the wherewithal to use evaluative data to improve the program.
4. Increase the likelihood of the decision-maker using the evaluation results.

In addition to having designated a role for the decision-maker,

this writer points out how the evaluator and the decision-maker should work together and, at the same time, maintain distinct roles. It is incumbent upon the evaluator to keep the decision-maker informed of any deviations and/or discrepancies. Consequently, the importance of step 5 of the application section cannot be over emphasized. It is step 5 that makes it possible for the decision-maker to take advantage of the evaluation data during the in-progress stage of the program and make modifications effectively, these modifications should lead to programmatic improvements that are consistent with the goal intent of the decision-maker.

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